the third tyne, *d*, of my figure joins the beam. Whether this kind of antler belongs to a well-marked variety of Fallow Deer or to a closely-allied species, I will not offer an opinion. It seems, however, safer to follow Professors Lartet, Gaudry, and most of the naturalists since the days of Cuvier, in keeping the fossil separate from the living forms, none of which present, so far as I know, a similar variation of antler. Till such an antler be found it is better to keep the animals apart in classification. And even if they be viewed as belonging to one species, they have only been met with in Pleistocene deposits in this country and in France, and they may reasonably be taken as visitors from the south, such as the contemporary hippopotami. In any case I would submit that they do not afford satisfactory grounds for believing with Dr. Sclater that the present distribution of the Fallow Deer in Northern and Central Europe by the hand of man is "an ancient fable." It is undoubtedly an ancient belief, and it is one which can be proved to some extent to be true by an appeal to the records of history.

To enter into the question of the introduction of Fallow Deer into Northern Europe would far outleap the limits of an article. A reference to Lenz's "Zoologie der Alten," and to Neckam's "Natural History," will show to what an extent the wealthy Romans and mediæval barons were in the habit of importing wild and rare animals for the chase, as well as for the sake of mere curiosity.

W. BOYD DAWKINS

THE ENGLISH ARCTIC EXPEDITION

SINCE our note of last week, the preparations for the Arctic Expedition have been advanced an important stage by the selection of Capt. Nares, of H.M.S. *Challenger*, to command the expedition. The choice is a happy one. Capt. Nares distinguished himself on board the *Resolute* in the Arctic Expedition of 1852-54, serving with M'Clintock, Mecham, and Vesey Hamilton. He led the depot sledge for Mecham's more extended journey. On that occasion he went over 665 miles in sixty-five days, while his efficient assistance enabled Mecham to cover 1,006 miles of ground in ninety-four days. Nares was also foremost in providing amusement for the men during the winter quarters, one of the most essential qualifications for Arctic work. His recent experience in the *Challenger* will have made him thoroughly acquainted with the duties required of the commander of a scientific expedition. Commander A. H. Markham, of H.M.S. *Sultan*, will also take a prominent position in the expedition. Capt. Nares was at Hong Kong when he received the telegram offering the command, and probably by this time is on his way home. The command of the *Challenger* will, it is understood, be entrusted to Capt. Frank T. Thomson, now in command of H.M.S. *Modeste*, in China, and who was the first captain selected for official duties in the Royal Naval College at Greenwich.

We announced, a fortnight ago, that the Admiralty had selected Rear-Admiral Richards, C.B., F.R.S., Rear-Admiral Sir Leopold M'Clintock, F.R.S., and Rear-Admiral Sherard Osborn, C.B., F.R.S., to advise them as to the preparations that should be made. This Committee met for the first time on Tuesday week, and have been sitting periodically since.

We understand that the Foreign Office is about to inquire of the United States Government whether the stores sent to a depot on the west coast of Greenland for the use of the *Polaris* are desired to remain there, or whether they may be made available for our expedition. If the United States consent to transfer these stores, it will be of considerable advantage to our ships.

Active preparations are being made at the Royal Victoria Victualling Yard at Deptford, for provisioning the ships which are to be engaged in the expedition. For this purpose 15,000 lb. of beef are undergoing a process of preservation.

It has been proposed, and no doubt very properly, that no persons not actually belonging to the navy can be allowed to take part in the expedition. This, however, effectually precludes any naturalist—as such—being attached to the staff. But the work to be done will principally consist in making collections to be worked up at home. And there is no reason to doubt that, as in the expedition of the *Erebus* and *Terror*, men will be found officially qualified for attachment to the expedition who will use every opportunity of securing for British science the credit of determining the nature of the fauna and flora of the regions in immediate proximity to the pole.

How great an interest is felt amongst naturalists as to the biological results of the expedition, may easily be imagined on reading the following passage from Markham's "Threshold of the Unknown Region" (pp. 201, 202):—

"The winter quarters were in a harbour called 'Thank God' Bay, in lat. 81° 38′ N., and long. 61° 44′ N., which the *Polaris* reached on Sept. 3. . . . The climate of the winter quarters was found to be much milder than it is several degrees further south. In June the plain surrounding 'Thank God' Bay was free from snow; a creeping herbage covered the ground, on which numerous herds of musk oxen found pasture, and rabbits and lemmings abounded. The wild flowers were brilliant, and large flocks of birds came northward in the summer."

The Kew Herbarium possesses four plants presented to it by Commander Markham, who obtained them from Dr. Bessels, of the *Polaris*. They were collected in 82° N. lat., "the most northern position from which any phanerogamic vegetation has hitherto been procured. The locality appears to have been on the east side of Smith's Sound. The species are *Draba alpina*, L.; *Cerastium alpinum*, L.; *Taraxacum Dens-leonis*, Desf. var.; and *Poa flexuosa*, Wahl." (NATURE, vol. viii. p. 487.)

The importance of obtaining information about the marine forms of life, both animal and vegetable, needs no insisting upon.

NOTES

IT will interest our readers to hear that the Berlin Academy of Sciences has set aside a certain sum of money, which will enable it to call to Berlin eminent men of science, who will have no teaching duties to perform. Prof. Kirchhoff has finally decided to accept the directorship of the Observatory for Solar Physics, now being erected at Potsdam, and will proceed to Berlin to commence his duties in connection with its establishment, in the spring.

IT is with great regret that we have to record the death of one of our most promising young naturalists, Mr. J. Traherne Moggridge, whose occasional contributions to these columns gave evidence of the powers of observation and research for which he was distinguished. His works on "Harvesting Ants and Trap-door Spiders," and "Contributions to the Flora of Mentone"—the latter beautifully illustrated by his own hand—contained important additions to our knowledge of different branches of science; a "Supplement" to the former of these works is just now issued from the press. Mr. Moggridge's kindly and unassuming manners had endeared him to a large circle of friends. A love of natural history was with him hereditary, being the grandson of Dillwyn, the monographer of the Confervæ, and joint author with Turner of the "Botanist's Guide." He died on Nov. 24, at the age of thirty-two, at Mentone, where the state of his health had compelled him to spend the winter for several years past. One of his great wishes was to bring his fellow-sufferers to learn, as he had done, that an invalid may be useful and happy.

MR. J. R. HIND writes as follows to the *Times* of Dec. 7, with regard to a new comet:—"Having been favoured with a telegram from M. Stephan, Director of the Observatory of Marseilles, notifying the discovery of a comet by M. Borrelly about four o'clock this morning, we have been able to observe the comet this evening, its present position allowing of observation both evening and morning. The place telegraphed is—Dec. 6, at 16h. mean time at Marseilles; right ascension, 239° 56′; polar distance, 53° 53′; motion towards the north. An uncertainty as to the comparison star unfortunately prevents me from adding the result of my observations this evening, but the comet will be readily found with a good telescope."

IN the same letter Mr. Hind points out that the zodiacal light has been conspicuous for the last few evenings, and that for several years past this phenomenon has been much more marked in December and January than about the vernal equinox.

SURGEON-MAJOR A. LEITH ADAMS, M.D., F.R.S., has been appointed to the Professorship of Zoology in the Royal College of Science at Dublin. Dr. Leith Adams is the author of several works in which natural history forms an important part; among them may be mentioned "Wanderings of a Naturalist in India, the Western Himalayas, and Cashmere," and "Field and Forest Rambles." His elaborate monograph on the "Fossil Elephants of the Maltese Islands" is also on the point of being published in the "Transactions" of the Zoological Society.

DR. J. W. HICKS has been elected to a Fellowship at Sidney Sussex College, Cambridge. Dr. Hicks was Senior in the Natural Science Tripos, and third among the Senior Optimes in 1870. He for some time held the Lectureship in Botany at St. Thomas's Hospital, and is now Demonstrator of Chemistry in the Cambridge University Laboratory. We may mention that though Sidney College was among the first in the University of Cambridge to offer Scholarships in Natural Science, yet its governing body has been chary of further encouraging the study by the bestowal of Fellowships. Ten years ago, indeed, the Senior in the Natural Science Tripos was rewarded by one; but Mr. Hicks has had to wait while wranglers in the "teens" have been preferred to him. We are glad that the College has made amends at last.

THE course for the Natural Science Moderatorships in Trinity College, Dublin, has just been published. It consists of three parts:—1. Physiological and Comparative Anatomy: books recommended, Carpenter's "Human and Comparative Anatomy" and Rolleston's "Forms of Animal Life." 2. Zoology and Botany: books recommended in Zoology, Huxley's "Anatomy of Vertebrates," Foster's "Introduction to Embryology," Nicholson's "Manual of Zoology," and Gegenbaur's "Comparative Anatomy," by Vogt; in Botany, Henfrey's "Course of Botany," by Masters, "Bentham's British Flora," and "Hofmeister on the Higher Cryptogamia," by Currey. 3. Geology and Physical Geography: books recommended, Dana's "Manual of Geology," Haughton's "Manual of Geology," and Keith Johnston's "Physical Geography." If a suggestion may be allowed, it would appear more in conformity with modern ideas that the subjects of the physiology and structure of plants and animals should be treated of as portions of botany and zoology; and surely the distribution of both plants and animals in space and in time appertains more to biology than to geology. Honours are now given in the natural sciences in the Sophister Classes, and the Professors of Geology, Zoology, and Botany give demonstrations in their respective subjects each term.

IN a note on the pollution of the Regent's Canal, the *Lancet* refers to the attempt which has been made to throw the chief blame on the Zoological Society's Gardens, which pour their surface drainage and the contents of their bathing-tanks into the canal. We have, the *Lancet* states, carefully examined the Society's arrangements, and at once acquit them of any blame in the matter. For, though undoubtedly some of the urinary excretion of the animals is carried off by the surface drainage, still the amount is small, and the evil in that respect is more than counterbalanced by the large volume of water (50,000 gallons) daily poured into the canal. Indeed, if that amount of water were in any way diverted, the condition of the canal would, in dry seasons, become worse than it is at present. We were convinced that none of the solid excreta could find their way to the canal through any channel.

WE hope that the meeting held in London on Monday night under the presidency of H.R.H. the Duke of Edinburgh will be the means of securing the remaining 30,000*l.* needed to complete the modest sum wanted wherewith to extend the premises of the University of Edinburgh. The meeting was throughout a satisfactory one, and all the addresses, by H.R.H. the Duke of Edinburgh, the Earl of Derby, Prof. Huxley, Dr. Lyon Playfair, Prof. Allman, and others, were pervaded with a strong feeling as to the necessity for an all-important place in education being given to practical training in science. Indeed, it was distinctly stated by Prof. Huxley that the demand for space was not simply owing to the great increase of students in past years, but to the total and happy revolution which had been effected within the last twenty or thirty years in the mode of teaching all branches of physical science. When he was a medical student, the only branch of scientific study properly taught—namely, by practical instruction—was anatomy. It had now, however, come to be understood that what was true of anatomy was true of all branches of science—that no man could know anything about science unless he worked at it practically with his hands. That was the only knowledge on which he could really depend. Hence had arisen the demand for scientific laboratories, in which the student not only had the means and appliances of investigation, but had his work superintended by practical instructors. That demand had increased tenfold the requirements of any teaching body that would do its work worthily, and without the requisite accommodation the scientific teaching of the University could not possibly yield any sound and fruitful results. Moreover, it had come to be recognised that a man could not be a successful teacher, exercising a moral influence on his students which constituted the essential difference between a professor and a book, unless he was himself an original investigator, promoting and increasing knowledge. We have no doubt that we shall soon be able to announce that the whole 100,000*l.* has been subscribed.

A PAPER on "University Development in Scotland," reprinted from the *Perthshire Constitutional*, has been sent us. It takes Edinburgh University, the largest (it has 1,800 students this year) and best known of the Scottish Universities, as representative of the others, and points out several directions in which there is room for improvement. The writer takes the German University as in some sort a model, and points out the following defects in the Scottish Universities:—(1) The want of sufficiently extensive and suitable buildings; (2) There should be a material increase in the teaching staff; (3) There should be a better endowment of professorships; (4) Graduates should be encouraged to devote themselves to *original research* by the provision of liberally endowed professorships; (5) There should be more liberal superannuation of professors after a shorter period of service. The writer urges on all those who have been educated in Edinburgh, and on all who wish to see it keep its position, to lend a hand in the movement now on foot to raise a sum sufficient to provide the University with the additional buildings which are absolutely necessary to its efficiency.

AT the meeting of the Dundee Town Council last Thursday, a letter from the directors of the Albert Institute of that town was read by Provost Cox, in which it was stated that a scheme for the erection of a college had been prepared, and the co-operation of the Council in the furtherance of the work was requested. It was proposed to establish a college in Dundee in connection with the St. Andrews University, and that at first the college should be opened with six chairs—namely, English Literature and Logic, Chemistry, Natural Philosophy, Engineering, Natural History or Greek and Latin, and Mathematics. To defray the expense of the erection of the college and to pay the salaries, 150,000*l.* would be required at the outside. If the college should succeed, it was proposed to add the following additional chairs—viz., Mental and Moral Philosophy, Political Economy, Ancient or Modern History, Latin and Greek or Natural History, Geography and Astronomy, and Physical Geography and Navigation. To endow these additional chairs a further sum of 75,000*l.* would be required. It was proposed that the management of the college should be carried on by the courts which at present manage the colleges at St. Andrews, the only addition to the University Courts of St. Andrews being that the following gentlemen should be members of that Court:—The Lord-Lieutenant of Forfarshire, the Convener of the County, the Sheriff and Sheriff-Substitute of Forfarshire, and the Provost of Dundee. The Council expressed themselves gratified at the movement, and while stating that they would be willing to give it their hearty co-operation, they resolved to call a special meeting for the consideration of the whole subject, to be held on Tuesday last. We would remind the organisers of the proposed new college of the great value of sound science-teaching to so important a manufacturing and commercial town as Dundee. There is nothing to hinder the wealthy merchants and manufacturers of Dundee starting a college at least equal to the Newcastle College of Science, and they should not rest until they possess an institution as efficient as Owens College, Manchester. This latter institution ought to be taken as a model, where all the so-called "faculties" are complete; a "College of Science," pure and simple, seems to us a blunder.

THE formal inauguration of the recently completed portions of the Edinburgh Museum of Science and Art is, we believe, to take place on Jan. 14 next, by a grand *conversazione* to be given by the Lord Provost in the Museum building.

A FURTHER instalment (the sixth part) of the new Government Map of Switzerland has recently appeared, containing the sheets Meiringen, Laax, Trons, Ilanz, Greina, Vrin, Andeer, Zweisimmen, Blumlisalp, Peccia, Blasca, and Maggia. Altogether 72 sheets are now published out of the 546 which will be necessary for the completion of the map. Those which have been issued are mainly of the central and north-west portions of the country, and regarding them we can only repeat the opinion that we have already expressed respecting the earlier sheets, namely, that they are equal and in some features superior to any maps of the kind that have yet appeared. Great as the cost of this map will be to the nation, we have no doubt that its expense will be repaid many times, in the facilities which it will afford in the construction of roads and railroads, and for many other purposes.

WE take the following from the *Academy*:—Now that the question of the endowment of research is being made so much a subject of discussion, it may interest our readers to learn the following particulars, which we take from the Swedish *Aftonbladet*. About a month since that newspaper drew attention to an appeal for funds made by the botanist Dr. Berggren, who is at present exploring the cryptogamic botany of the mountains of New Zealand. It appears that Dr. Berggren has already made some very valuable explorations, first in Spitzbergen in 1868, then in Greenland in 1870, and now has been sent out to New Zealand with a stipend drawn from a sum of money left by a Herr Lettersted for scientific purposes. Dr. Berggren writes that he has had signal success, especially in discovering species closely analogous to the Arctic forms with which he is familiar, but that his means are at an end. An effort made to induce the Government of Canterbury Province to vote him a sum of money was on the point of succeeding, when an economical frenzy took the Lower Legislative House, and the bill was thrown out. *Aftonbladet* laid these facts before its readers. Almost immediately, the proprietors of another newspaper, *Göteborg's Post*, generously forwarded a large sum towards the prosecution of the work, and private funds came in so rapidly that Dr. Berggren will be able to recommence his valuable explorations directly the next mail reaches New Zealand. This zealous response to the demands of science in so poor a country as Sweden does honour to the intelligence of its people.

A TELEGRAM dated Alexandria, Dec. 8, states that two reconnoitring expeditions, each consisting of eight European and twelve native officers and sixty-three soldiers, have been organised by the Egyptian Government, and have started for the Soudan, with the object of surveying the country between the Nile and the provinces of Darfour and Kordofan. Thence the expeditions will proceed to the Equator, west of the Albert Nyanza. They will repair the wells wherever necessary, and prepare maps, and will also report upon the population, climate, and commerce of the country through which they pass.

A MEETING of the local committee in connection with the recent meeting of the British Association, was held in Belfast on Saturday. The expense incurred has been about 1,800*l.*, leaving a surplus of more than 500*l.*, which the Executive Committee recommend should be divided among various local institutions.

WE would draw attention to a very valuable paper "On the Expediency of Protection for Patents," by Mr. F. J. Bramwell, C.E., F.R.S., published in the *Society of Arts Journal* for Dec. 4.

THE additions to the Zoological Society's Gardens during the past week include two Glaucous Gulls (*Larus glaucus*) from Spitzbergen, presented by Mr. R. E. Beaumont; a Common Raccoon (*Procyon lotor*) from N. America, presented by Mr. T. Trimnell; a Bonnet Monkey (*Macacus radiatus*) from India, presented by Mrs. Phillips; a Solitary Tinamon (*Tinamus solitarius*) from Brazil, received in exchange; three Black-footed Penguins (*Spheniscus demersus*) from S. Africa, purchased; a Capybara (*Hydrochœrus capybara*) born in the Gardens.

THE "CHALLENGER" EXPEDITION*

II.

THE following Table, taken from the chart, gives a good general idea of the distribution of the two formations with respect to depth. It cannot of course be taken as exact; the indications were jotted down from the impression of colour given at the time, and there is no hard and fast line between Globigerina ooze and grey ooze on the one hand, and between red clay and grey ooze on the other. This Table gives an average depth of 1,800 fathoms for our soundings in the Globigerina ooze. This is datum of no value, for we only rarely sounded in shallow water, and we know that this formation covers large areas at depths between 300 and 400 fathoms; but the mean maximum depth at which it occurs is important, and that may be taken from the Table as about 2,250 fathoms. The mean depth at which we find the transition grey ooze is 2,400 fathoms, and the mean depth of the red clay soundings is about 2,700 fathoms. The general concurrence of so many observations would go far to prove, what seems now to stand indeed in the position of an ascertained fact, that wherever the depth increases from about 2,200 to 2,600 fathoms, the modern chalk formation of the Atlantic and of other oceans pass into a clay.

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* Continued from p 97.